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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,665	12/21/2001	Tomoyuki Hiroki	35.C16046	6489

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EXAMINER

CULBERT, ROBERTS P

ART UNIT PAPER NUMBER

1763

DATE MAILED: 12/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/023,665

Applicant(s)

HIROKI ET AL.

Examiner

Roberts Culbert

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1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6/17/02.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 6-171089 to Utsunomiya.

Regarding claims 1, 3, and 4, and referring to the drawings, Utsunomiya teaches a method for manufacturing a liquid injecting head, in which liquid flow paths are defined by combining an element substrate (10) having a plurality of discharge energy generating elements (See DERWENT Abstract) for applying discharge energy to liquid with a nozzle member (8) having a plurality of liquid discharge nozzle grooves (1), comprising the steps of: preparing at least one material common to said element substrate as a base material of said nozzle member; forming etching mask layers (See Drawing 2) on a first surface of the base material of said nozzle member in which said nozzle grooves are formed and a second surface opposite to said first surface; forming a recessed portion (2) in said second surface of the base material by patterning said mask layer on said second surface of the base material and by effecting etching via said mask layer of said second surface; and forming said nozzle grooves (1) in the base material and for communicating said recessed portion with said nozzle grooves by patterning said mask layer on said first surface of the base material and by effecting etching via said mask layer of said first surface and said mask layer of said second surface, wherein said nozzle member is a silicon substrate formed to have a surface of (110) crystal face orientation, (See Paragraph 13) and etching for the base material of said nozzle member is anisotropic etching (See paragraph 7, and Drawing 4) directing perpendicular to a surface of the base material, wherein said mask layer is constituted by a silicon dioxide film (See Paragraph 10). As shown in Drawing 3, an etching amount  $t$  of etching for forming said

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recessed portion satisfies a relationship  $t_w > t > t_w - t_n$ , when it is assumed that a thickness of said nozzle member is  $t_w$  and a depth of said nozzle groove is  $t_n$ . Note that Paragraph 12 states that Drawing 3 shows nozzle dimensions, and therefore it may be assumed that the drawing is accurately represented.

Regarding claims 5, 7, and 8, and referring again to the drawings, Utsunomiya further teaches a method for manufacturing a liquid injecting head, in which liquid flow paths are defined by combining an element substrate (10) having a plurality of discharge energy generating elements (See DERWENT Abstract) for applying discharge energy to liquid with a nozzle member (8) having a plurality of liquid discharge nozzle grooves (1) and a liquid chamber (2') communicated with said nozzle grooves, comprising the steps of: preparing at least one material common to said element substrate as a base material of said nozzle member; forming etching mask layers (See Drawing 2) on a first surface of the base material of said nozzle member in which said nozzle grooves are formed and a second surface opposite to said first surface; forming a recessed portion (2) in said second surface of the base material by patterning said mask layer on said second surface of the base material and by effecting etching via said mask layer of said second surface; and forming said nozzle grooves (1) and said liquid chamber (2') in the base material and for communicating said recessed portion (2) with said liquid chamber (2') by patterning said mask layer on said first surface of the base material and by effecting etching via said mask layer of said first surface and said mask layer of said second surface, wherein said nozzle member is a silicon substrate formed to have a surface of (110) crystal face orientation, (See Paragraph 13) and etching for the base material of said nozzle member is anisotropical etching (See paragraph 7, and Drawing 4) directing perpendicular to a surface of the base material, wherein said mask layer is constituted by a silicon dioxide film (See Paragraph 10). As shown in Drawing 4, an etching amount  $t$  of etching for forming said recessed portion satisfies a relationship  $t_w > t > t_w - 2 * t_n$  when it is assumed that a thickness of said nozzle member is  $t_w$  and a depth of said nozzle groove is  $t_n$ . Note that Paragraph 13 states that Drawing 4 shows nozzle dimensions, and therefore it may be assumed that the drawing is accurately represented.

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***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See U.S. Patents 4,601,777; 4,638,328; 5,870,123; 5,902,492; and 6,375,858.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (703) 305-7965. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

R. Culbert

  
GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
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